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(54) Isolator for laboratory animals

(57) The isolator (1) is provided with one or more storage bins (9) forming part of the exterior of the isolator (1), the bins being isolated from the interior of the isolator by openable lids (12) and from the exterior by openable doors (14). Any items inside the storage bins may be manipulated by gloves (6) and sleeves (4) provided in the front wall of the isolator. Cages (3) for housing the animals are also provided.

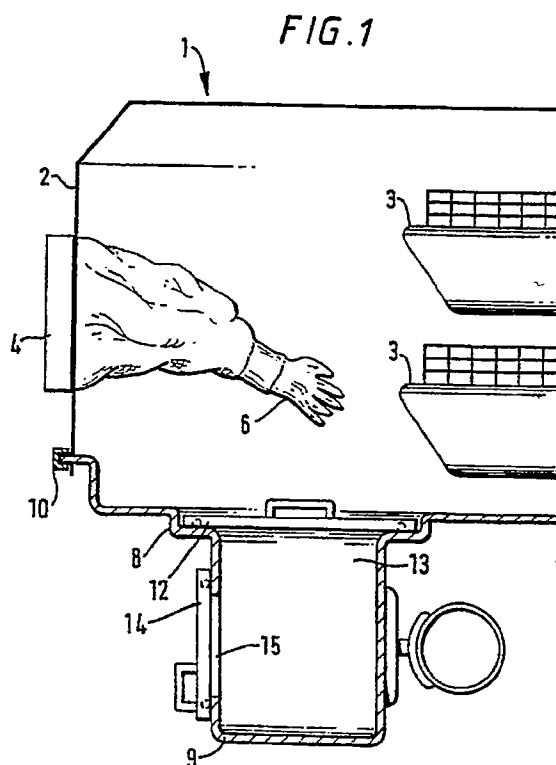
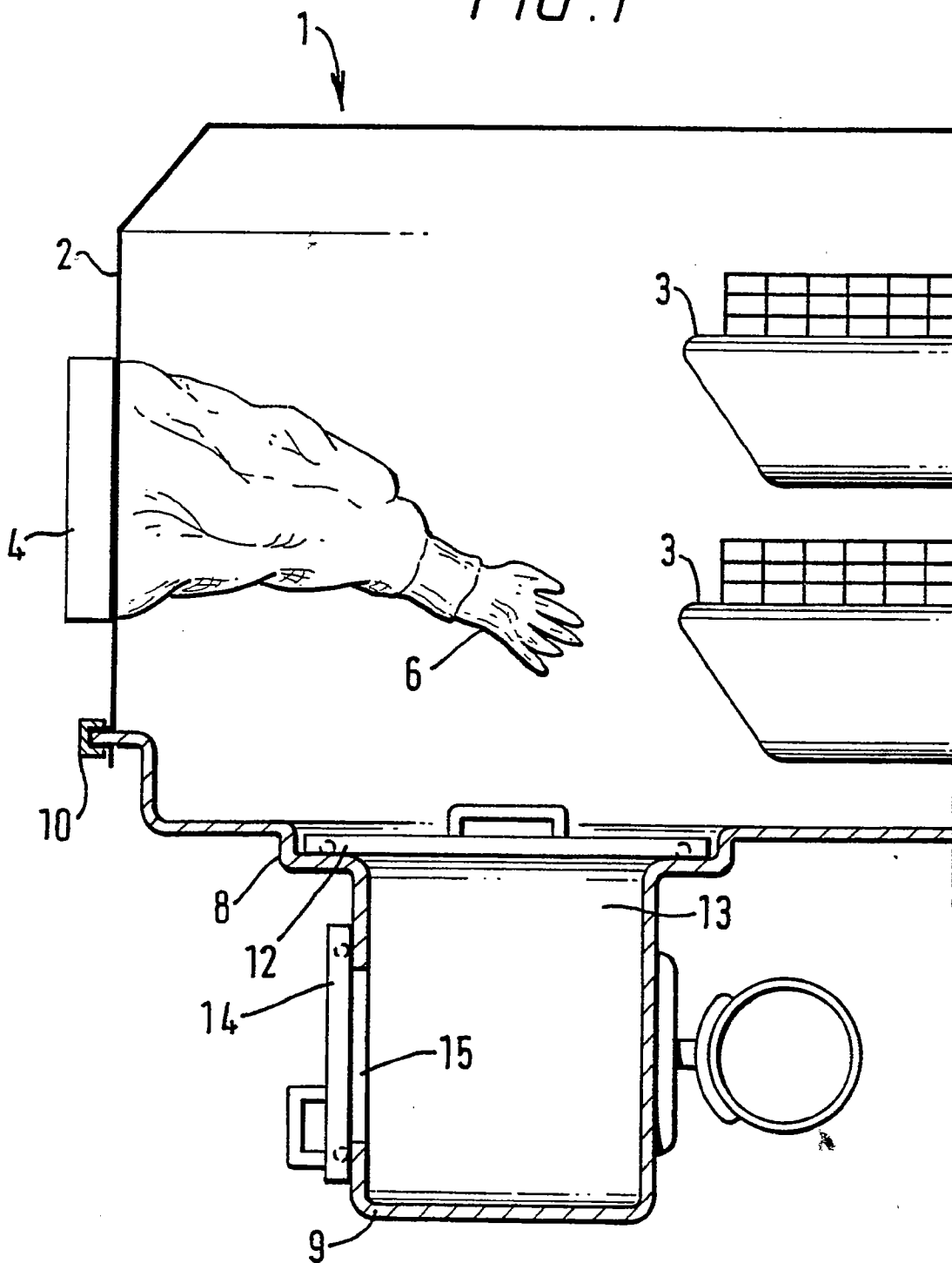


FIG. 1



AN ISOLATOR

This invention relates to an isolator to be used
5 for the isolation of laboratory animals for use in medical
and pharmaceutical research and the like.

Isolators for laboratory animals are well-known
and are used to provide a non-infective environment for the
animals by isolation and provision of a filtered air supply,
10 as required for meaningful experimentation.

These isolators are generally made of clear
flexible PVC film material formed to provide a sealed
envelope. This envelope is suspended from a metal framework
and carries sleeves and gloves projecting into the isolator
15 whereby procedures may be carried out within the isolator.

The interior of the isolator may be held at
pressures higher or lower than atmospheric, according to the
nature of the work in hand.

Animals contained within an isolator are generally
20 held in cages mounted on the back wall. Manipulative
sleeves and gloves project through the front of the isolator
into a gap between the front and the cages. This gap must
be kept free of obstruction to allow manipulation of the
animals and equipment. This leads to a lack of storage
25 space in which to keep sterilized food, bedding and the
like.

Furthermore, the isolating requirement of the isolator leads to difficulty in introducing bulky food and bedding into the isolators without breach of the isolator containment. To date this has been achieved by a lock
5 chamber consisting of a length of tube sticking in from the front wall, each end of the tube being removably covered. This is rather inconvenient, has very limited (if any) storage capacity, and occupies space in the free volume of the isolator which could better be utilized for
10 manipulations.

The present invention addresses these problems.

In the present isolator the floor of the isolator is at least partially replaced by storage bins having lids. When the lids are closed, they are generally flush with the
15 floor. Therefore when the lids are closed the interior of the isolator has the same floor space available as in traditional isolators. The bins may run along the length of the cage and to a depth compatible with the reach of the gloves and so opening the lids gives access to a
20 considerable storage volume.

Traditionally, isolators have been made with the envelope forming a complete "bubble" including the floor of the isolator. This would make the construction of the floor-mounted bins impractical. The invention therefore
25 embraces the construction of the floor and storage bins as a one-piece base-tray for example in glass-reinforced

plastic so that a smooth, radiused, easily cleanable interior is presented. An envelope, or canopy, consisting of the ceiling and side walls of the isolator is then sealed gas-tight to the edge of the base-tray by wrapping the

5 canopy around a longitudinal peripheral flange moulded as part of the base-tray. It is then secured by a continuous U-shaped proprietary strip pressed over canopy and flange.

It is a further object of the present invention to provide a means for introducing supplies of food, bedding

10 and equipment into the isolator. This is achieved by providing doors in the base-tray to allow communication between the outside of the isolator and the storage bins.

The storage bins are now provided with doors for communication with the exterior and lids for communication

15 with the interior. This allows the storage bins also to function as lock chambers. In order to better isolate the interior of the isolator, the doors and lids should preferably close to form a gas-tight seal.

In a further embodiment of the invention, there

20 are baskets provided for introducing items into the isolator. The storage bins may then be formed to be of a depth too great for their bottoms to be accessible by the gloves. A basket containing the items is now placed in a storage bin. The top of the basket may be reached by the

25 gloves and so the basket may be lifted into the isolator wherein the contents of the basket may be removed.

A preferred embodiment of the present invention will now be described with reference to the drawings.

Fig 1 is a partial vertical section of a preferred embodiment of the present invention.

5 Fig 1 shows an isolator 1 having a canopy 2 sealed at its bottom to a base-tray 8 by a U-section proprietary seal 10.

The isolator contains one or more cages 3 for housing animals.

10 Sleeves 4 and gloves 6 sealed to apertures in a front wall of the canopy 2 project into a space between the cages 3 and the front of the canopy.

The base-tray 8 provides a floor for the isolator and includes several storage bins 9 which are positioned
15 below the floor, in the gap between the cages 3 and canopy 2.

Each storage bin 9 is provided with a first opening 13 at its top which is closeable in a gas-tight sealing manner by a lid 12 which when in position lies
20 generally flush with the floor of the isolator. This first opening 13 allows communication between the storage bin 9 and the interior of the isolator.

Furthermore, a side wall of each storage bin 9 is provided with a second opening 15 which is closeable in a
25 gas-tight sealing manner by a door 14. This second opening 15 allows communication between the storage bin 9 and the

exterior of the isolator.

In a first preferred embodiment of the invention, the arrangement is such that gloves 6 and sleeves 4 allow the manipulator to reach part of the storage bin 9.

5 In a modification, there is a basket provided in the storage bin 9, this basket being loadable via the second opening 15 and having its top or handle manipulable by the gloves 6 and sleeves 4. In such an arrangement the bottom of the bin need not be directly accessible to the
10 manipulator.

The invention is further directed to a method of isolationally moving one or more items into or out of the isolator 1.

After making sure that the lid 12 is closed, the
15 door 14 is opened.

Items are introduced into the storage bin 9 via the first opening 15. They may be sterilized by treatment before or after being so introduced. The door 14 is closed and, if necessary after a delay to ensure sterilization, the
20 lid 12 can be opened and the items used. The routine is reversed to discharge items from the isolator.

The above method may be adapted for use in the modification of the apparatus by introducing the items into the basket in the storage bin 9, or by introducing a
25 preloaded basket into the bin through the opening 15.

CLAIMS:

1. An isolator having an enclosed interior including a base-tray part of which is a storage bin, said storage bin
5 forming part of the exterior of the isolator, said storage bin having an opening into the interior of the isolator and having closure means for separating the storage bin from the interior.
2. An isolator according to claim 1 wherein the
10 closure means provide gas-tight isolation of the storage bin from the interior.
3. An isolator according to claim 1 or claim 2 wherein the storage bin includes a second opening which is to the exterior of the isolator, said second opening
15 having second closure means for separating the storage bin from the exterior.
4. An isolator according to claim 3 wherein the second closure means provide gas-tight isolation of the storage bin from the exterior.
- 20 5. An isolator according to any one of the preceding claims and having a manipulator operable from the exterior, said manipulator being projectable into the storage bin.
6. An isolator according to any one of the preceding
claims with a canopy having generally vertical walls and a
25 top, the base-tray being a discrete entity sealed to the bottom of the walls.

7. An isolator according to claim 6 wherein the canopy and the closure means are generally transparent.

8. A method for isolationally moving one or more objects into an isolator, said isolator having an enclosed interior including:

a base-tray, part of which is a storage bin forming part of the exterior of the isolator;

a closeable lid in order to isolate the storage bin from the interior; and

10 a closeable door in order to isolate the storage bin from the exterior;

said method having steps including, in order:

- closing the lid
- opening the door
- 15 - introducing said objects into the storage bin from the exterior
- closing the door
- opening the lid, and moving one or more of the objects upwardly into the isolator.

20 9. A method for isolationally moving one or more objects out of an isolator, said isolator having an enclosed interior including:

a base-tray, part of which is a storage bin forming part of the exterior of the isolator;

25 a closeable lid in order to isolate the storage bin from the interior; and

a closeable door in order to isolate the storage bin from the exterior;

said method having steps including, in order:

- closing the door
 - 5 - opening the lid
 - introducing said objects into the storage bin downwards from the interior
 - closing the lid
 - opening the door and removing the objects from the storage bin.
- 10

10. An isolator substantially as herein described with reference to the drawings.

- 9 -

Relevant Technical fields

(i) UK Cl (Edition L) A5R (RET) ; B4Q; C6F (FAP)

(ii) Int Cl (Edition 5) A01K, A61G, B25J, G21F

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASE: WPI

Search Examiner

L V THOMAS

Date of Search

25 AUGUST 1993

Documents considered relevant following a search in respect of claims 1-10

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
	NONE	

Categories of documents

X: Document indicating lack of novelty or of inventive step.

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